What is claimed is:

1. A cathode ray tube comprising:

envelope having a panel and funnel,

said panel including a sidewall portion and a faceplate portion, said faceplate portion having on its interior a luminescent screen, said screen having a plurality of substantially straight phosphor stripes;

said panel further including a mask contained therein, said mask having columns of apertures, said columns corresponding to respective said phosphor stripes, said columns including tie bars which separate said apertures from each other in said columns, said apertures in said columns having an aperture pitch;

said funnel having a neck at an end opposite of said panel, said neck containing therein an electron gun;

said gun emitting at least one electron beam which scans across said columns of said mask in a direction perpendicular to said stripes, portions of said electron beam propagate through said apertures and impinge corresponding said phosphor stripes, said electron beam scanning across said screen in a number of sweeps, said number of sweeps making up a full screen image defining a scan line mode, wherein adjacent sweeps each have scan line spacings, said electron beam having a spot size, said spot size varying as a function of location as said electron beam scans across said screen and said spot size being the full width of that portion of said electron beam that exceeds 5% of the peak electron beam intensity, said full width being in the dimension parallel to said columns of said mask; wherein

the ratio of said spot size of said electron beam to said aperture pitch exceeds about 0.9 and

said aperture pitch decreases with increasing distance from a central aperture column.

2. The CRT according to claim 1, wherein said gun is a dynamic focus electron gun or a static focus electron.

3. The CRT according to claim 1, wherein at least some of said apertures in said columns are staggered with respect to said apertures in said columns adjacent therewith.

4. The CRT according to claim 1, wherein said CRT operates at a number of said sweeps that

are within the range of 250 to 2000.

5. The CRT according to claim 1, wherein said columns of said apertures are oriented vertically and said sweeps are scanned horizontally.

6. The CRT according to claim 1, wherein said columns of said apertures are oriented horizontally and said sweeps are scanned vertically.

7. The CRT according to claim 1, wherein said screen has a moiré transformation function of less than about 0.02, said moiré transformation function being a quotient having a numerator being the difference between a light output maximum value and a light output minimum value and a denominator being the sum of said light output maximum value and said light output minimum value; wherein

light output is the quantitative measure of light generated as said at least one electron beam scans said screen;

said maximum value is the greatest value of said light output which is integrated over at least 2 consecutive like said phosphor stripes; and

said minimum value is the lowest value of said light output which is integrated over at least 2 consecutive like said phosphor stripes.

8. The CRT according to claim 1, wherein said electron beam has a spot shape in the axis parallel to said columns described as

$$I = e^{-k(y-y_0)^m}$$

wherein I is the electron beam intensity, k is a constant, y_0 is the position of the peak electron beam intensity for a single scan line, $y - y_0$ is the dimension from the peak electron beam intensity value, and m is a value in the range of 2.0 to 2.5.

9. A display device comprising:

envelope having a panel and funnel,

said panel including a faceplate portion, said faceplate portion having a luminescent screen, said screen having a plurality of phosphor elements, each of said phosphor elements forming substantially a column,

said panel further including a mask contained therein, said mask having apertures

which form substantially straight aperture columns, each of said apertures corresponding to a respective phosphor element, said apertures in each of said aperture column being separated by unetched metal, said apertures in said aperture columns having an aperture pitch;

said funnel having a neck at an end opposite of said panel, said neck containing therein an electron gun;

said gun emitting at least one electron beam which scans across said aperture columns, portions of said electron beam propagate through said apertures and impinge corresponding said phosphor elements, said electron beam scanning across said screen in a number of sweeps, said number of sweeps making up a full screen image being a scan line mode, wherein spacially adjacent sweeps each have a scan line spacing, said electron beam having a spot size, said spot size being a dimension of said electron beam at 5% of the peak electron beam intensity, said dimension being parallel to said aperture columns, said spot size to said pitch having a ratio exceeding a value of about 0.9 along at least two of said sweeps.

10. The display device according to claim 9, wherein said ratio exceeds 0.9 throughout said screen.

11. The display device according to claim 9, wherein the aperture pitch decreases with increasing distance from a central aperture column in at least one lateral portion across said screen..

12. The display device according to claim 9, wherein said device is an entertainment cathode-ray tube or a computer monitor.

13. The display device according to claim 9, wherein said gun is a static focus gun or a dynamic focus gun.

14. The display device according to claim9, wherein said device has a number of sweeps that are within the range of 250 to 2000.

15. The display device according to claim 9, wherein said aperture columns are oriented vertically and said sweep are scanned horizontally.

16. The display device according to claim 9, wherein said aperture columns are oriented horizontally and said sweeps are scanned vertically.

17. The display device according to claim 9, wherein said screen has a moiré transformation function of less than about 0.02, said moiré transformation function being a quotient having a numerator being the difference between a light output maximum value and a light output minimum value and a denominator being the sum of said light output maximum value and said light output minimum value; wherein

light output is the quantitative measure of light generated as said at least one electron beam scans said screen;

said maximum value is the greatest value of said light output integrated over multiple adjacent said straight aperture columns; and

said minimum value is the lowest value of said light output integrated over multiple adjacent said straight aperture columns.

18. The CRT according to claim 17, wherein wherein said device has a number of sweeps that are within the range of 250 to 2000.

19. A cathode ray tube comprising envelope having a panel and funnel, said funnel having a neck at an end opposite of said panel, said neck containing therein an electron gun, said gun emitting at least one electron beam, said panel including a faceplate portion having a luminescent screen with a plurality of substantially straight phosphor columns, said panel having a mask contained therein, said mask having columns of apertures, said columns corresponding to respective said phosphor stripes, said columns including tie bars which separate adjacent apertures, said adjacent apertures having an aperture pitch, said aperture pitch in at least one portion of said mask decreasing with increasing distance from a central column of apertures and the ratio of said spot size of said at least one electron beam to said aperture pitch in said at least one portion of said mask exceeds about 0.9, said spot size being a dimension that is parallel to said phosphor columns and being the full width at 5% of the greatest intensity of said electron beam.

20. The CRT according to claim 19, wherein said spot size to said pitch having a ratio exceeding a value of about 0.9 along at least two of said sweeps.

21. The CRT according to claim 19, wherein said spot size to said pitch having a ratio exceeding a value of about 0.9 over entire screen.

22. The CRT according to claim 19, wherein said screen has a moiré transformation function of less than about 0.02, said moiré transformation function being a quotient having a numerator being the difference between a maximum value and a minimum value of mask transmission and a denominator being the sum of said maximum and said minimum values; wherein

mask transmission being the percentage of said at least one electron beam that propagates through said apertures averaged over a plurality of adjacent said mask aperture columns; and

the regions containing said maximum and minimum values being adjacent to each other.

23. The CRT according to claim 19, wherein said spot shape in the axis parallel to said columns is described as

$$I = e^{-k(y-y_0)^m}$$

wherein k is a constant, y_0 is the position of the peak electron beam intensity for a single scan line, $y - y_0$ is the dimension from the peak electron beam intensity value, and m is a value in the range of 2.0 to 2.5.

24. The CRT having envelop including a panel attached to a funnel, said funnel having a neck and an electron gun for generating at least one electron beams contained in said neck, and a mask contained in said envelop near said panel, comprising:

a region in said mask having columns of apertures of predetermined heights and predetermined pitches; and

said at least one electron beam having a spot size range and spot shape selected such that the moiré transformation function for said CRT in said region is less than about 0.02, wherein, said moiré transformation function being a quotient having a numerator being the difference between a maximum value and a minimum value of mask transmission and a denominator being the sum of said maximum and said minimum values; wherein mask transmission is the percentage of electrons of a uniform electron beam incident on said

that can propagate therethrough said apertures averaged over a plurality of adjacent said mask aperture columns and said regions containing said maximum and minimum values are adjacent to each other.